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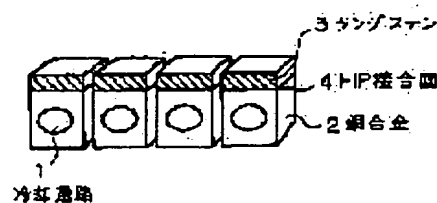|	
(21)Application number : 09-360223	(71)Applicant : JAPAN ATOM ENERGY RES INST
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(54) HEAT RESISTANT DIRECT JOINT STRUCTURE OF HIGH MELTING POINT MATERIAL AND HIGH THERMAL CONDUCTIVITY MATERIAL OR JOINTING METHOD THEREFOR

(57)Abstract:

PROBLEM TO BE SOLVED: To enhance uniformity at joint and joint efficiency by composing the cooling passage of a fusion reactor of a copper alloy having high thermal conductivity and composing a cooling plate of tungsten.

SOLUTION: A fusion reactor comprises a vacuum vessel, a coil generating a field for confining a hydrogen isotope plasma and a cooling passage 1 for passing coolant arranged in the vacuum vessel, and a cooling plate having a material facing plasma. A member having the cooling passage 1 is composed of a copper alloy 2 having high thermal conductivity and the cooling plate is composed of tungsten 3 having high melting point. The copper alloy 2 and tungsten 3 are jointed directly through an HIP(high pressure isotropic pressure) joint face 4 without using any brazing material. Direct jointing is performed under temperature of 900-1,100°C by applying a high pressure of 50-200 MP isotropically for 0.15-4 hours.

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